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TRAINING PUPILS TO STUDY

H. B. WILSON

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Training Pupils to Study

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TRAINING PUPILS TO STUDY

By

H. B. WILSON

Superintendent of Schools, Topeka, Kansas

Baltimore

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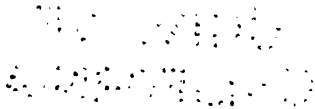

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PREFACE

This monograph on "Training Pupils to Study" was issued in the course of study series of the Topeka, Kansas, Public Schools, in January, 1917, as a supervisory device. The object was to supply help to the teaching staff in their efforts to train pupils in effective methods of study and work. Accordingly, the aim was to record in an organized statement the different things which teachers reported they did in training their pupils to study.

Largely because Dr. A. E. Winship commented favorably in the *Journal of Education* upon the value of the monograph, the official edition of the document was exhausted by March first. The requests for it continued, however, in such large numbers that it finally seemed best to consent to its publication, without revision. The reader will find evidence throughout of its being designed originally for merely family use.

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But for the good work of the teaching staff, making the detailed reports of the excellent results secured possible, the material in the following pages would never have been produced. My only rights in the production consist in any leadership I may have exercised in inspiring the teachers to work from this standpoint and in organizing the teachers reports into the form employed in the following pages.

H. B. WILSON.

Topeka, Kansas, April 18, 1917.

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CONTENTS

Preface v
Introduction 1
The Factors in Study 7
I. Providing Specific Aims 9
II. Gathering Data 15
III. Supplementing the Thought. 18
IV. Judging What To Do and the Worth of the Data 24
V. Organizing the Data 26
VI. Maintaining a Tentative Attitude or Holding Judgment in Suspense—How Secured 28
VII. Reaching a Conclusion 30
VIII. Applying the Use of Conclusions 30
IX. Memorizing 32
X. Preserving Student's Individuality 35
XI. Establishing Right Habits of Study 36
Complete Reports on Training to Study 41

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Second Grade..... 42
Third Grade..... 44
Fourth Grade..... 51
Fifth Grade..... 55
Sixth Grade..... 59
Seventh Grade..... 64
Eighth Grade..... 68

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Training Pupils to Study

Introduction

FOR many years teachers have understood that they are responsible for equipping children with a certain amount of knowledge and for rendering some of that knowledge into habit. It is only in recent years that they have likewise seen that they are responsible for training children in right methods of procedure and work. For a careful analysis of the possibilities in this field and for clear guidance as to the procedure, we are indebted to the pioneer work of Dr. Earhart and Dr. McMurry. The books produced by both of these authors on this problem were the basis of study in this field on the part of the Topeka Teachers during 1914–15. The latter part of that year and throughout the past year, some good results were secured from the efforts of the teaching staff to

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train the children in right habits of study. The succeeding pages are devoted to recounting as fully as possible the progress made as evidenced in the reports filed by the teachers at the close of last year.

The text is divided into two sections. The first section is an analytical presentation in outline form of the results obtained from grade to grade in the different subjects in training the children in right habits of study. This outline has been built up by dissecting reports presented by the teachers. The second section presents a few complete reports showing what different teachers did in detail in training the children to study.

The Factors of Study

To state the factors of study means merely to note what one does when he works effectively upon the solution of any problem, then after analyzing what has occurred in study, indicating in logical order, the steps that have taken place. It would be possible either to condense or elaborate the factors of study as stated below. The reports show that in practice we have found it

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convenient to recognize eleven things which children must be trained to do in effective study. It is believed that the following pages will render good service in enabling us to make further progress in training pupils to study. These pages aim throughout to record the work reported by teachers in order to bring to the attention of all, the best work accomplished and reported by each.

Conditions of Study

Experience makes it clear that the prerequisite condition to natural, effective studying is a vital difficulty to be removed, a significant question to be answered, a real problem to be solved. The situation must be personally meaningful and significant to the pupils concerned.

This condition is fundamentally essential also to any adequate motivation of the work to be done. There can be no motive for effort until a real, vital difficulty, question or problem is met. The problem presents the thing to be done or mastered. The motive is the impetus or "urge" the doer (the pupil) feels to solve the problem.

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The Factors in Study

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THE FACTORS IN STUDY

In the following outline, the factors in study are analyzed as follows:

1. Providing for specific problems. Often this will mean working upon the solution of a real problem which the children have met in their experience. Its solution may supply definite problems in several subjects. More frequently it will consist in recognizing the problem which the author is attempting to work out in a book and proceeding to master the solution which he offers.

2. Gathering data pertaining to the solution of problems.

3. Supplementing the thought of the text, or the data immediately available in solving an actual social problem discovered apart from the text-book.

4. Judging what to do and how to proceed in solving a real problem and judging the soundness and worth of the data and statements in textbooks.

5. Organizing the data gathered from various sources in relation to the problem under solution.

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6. Holding judgment in suspense as the various data are secured and as the statements of different authors and students as to the solution of the problem are gathered.

7. Reaching a conclusion as to the solution of the problem, as in formulating a conclusion or a technical definition, or deciding on a plan of procedure.

8. Applying or using the conclusion reached or the plan determined upon.

9. Memorizing, either for immediate use as in committing a poem, or for establishing a result in automatic memory, as in mastering the spelling of words or the multiplication table.

10. Preserving the individuality of each student,—a result of rightly directed study.

11. Establishing right habits of study —really not a factor in study, but detailed training in procedure which teachers seek to establish as a part of the work of the children at study.

In the outline below it will not be necessary to state each of these factors so fully as above. The full statement as noted above may be referred back to if the outline is not clear.

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1. Providing Specific Aims.

1. Elimination of Non-significant or Useless Material.

3 B and 3 A.—Read lessons and selections according to appropriateness to the season or other work. Useless, impractical arithmetic problems are omitted.

4 B and 4 A.—In geography, class goes over the new lesson and selects the important matter, giving reasons for considering it so and omitting the remainder.

5 B and 5 A.—Children are watchful as to whether the ideas and material brought up in class discussion apply to the question under study. If not, pupils readily suggest the one reciting is "not talking on the point." Children select important paragraphs in their lessons in light of their relation to the specific aim.

6 B and 6 A.—Class is frequently asked "Will this help us to gain our end?"

2. Suggesting Ways of Using Knowledge.

1 B and 1 A.—Teacher suggests reading the daily story to mother and little folks at home.

2 B and 2 A.—Retelling school stories to mother and little folks. Writing let-

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ters to aunts and uncles. Reading, the same as in first grade. Showing number work will enable them to make correct change at the store.

3 B and 3 A.—Suggest the telling of stories from language work at home. The reading of stories to smaller sisters and brothers at home, or to other classes in the school.

5 B and 5 A.—To impress the children with the importance of the knowledge gained in geography, ask such questions as "In what direction would you go to reach a given place?" "What route would you use, and why?" Emphasize that their language and arithmetic training will enable them to make out a correct bill for the books they have bought or for the manual training supplies they wish to secure. Language work will enable them to write business and social letters. Show the importance of the decimal point because our money is written with the decimal system, requiring that we be intelligent and careful in our money transactions.

6 B and 6 A.—Suggest the telling of a joke or good story at the dinner table or to company as a means of employing language ability.

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3. Define Aims in Assigning Lessons.

1 B and 1 A.—"See what the story tells about this picture." "See what name might be given to the story in the book." "Read Farmers' Pets, page 109, to learn if you ever ate any seeds."

2 B and 2 A.—Children given definite things to find out, as "Where did the events occur?" "Who were the characters?"

3 B and 3 A.—In language—"Let us write this letter so well that it may be sent to the principal." In reading—"Let us learn to read this lesson so well that we may present it at the next assembly." Find out which you would rather have been—"a Spartan or an Athenian boy."

4 B and 4 A.—In geography—"If you were planning to locate in the South, would you buy a piece of property alongside the Mississippi River without hesitation?"

5 B and 5 A.—In geography—"Which is the better place to live, China or Japan? Has New Orleans a good natural harbor?"

6 B and 6 A.—In geography—"What would happen if the United States would

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lose her wheat crop?" "Her cotton crop?" Which would be the greater loss? Why are cities in Kansas in the eastern half of the State? How will the Panama Canal help commerce (*a*) of the United States, (*b*) of the World? "Why New York grew to be so large?"

7 B and 7 A.—In geography—"How do people of Southern Canada make a living? If you were to move to Alaska, how would you make a living? Why are so many large cities found in the St. Lawrence Valley?" In reading—"Show from the selection what the fate of Roderick Dhu was." In arithmetic—"What taxes do the people of Topeka pay and for what purpose is the money raised spent?" In history—"Find as many events as you can which point to a permanent Union."

8 B and 8 A.—In dramatics—"What shall we leave out? How shall we represent so many different places with limited scenery?" In physiology, the entire term's work was organized around one big problem: The body is the home of my soul while on earth. What questions did the Creator have to answer when He

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designed the digestive system? The circulatory system? The hearing system? The seeing system? etc. When are narcotics friends and when enemies to the body? Material easily obtained from books, and also gathered from individual observations or experiences. Results outlined, and organized on basis of friends and enemies to body. Write on one phase of subject—"What narcotics will be likely to be my greatest temptation?"

4. Recalling the Aims Frequently.

3 B and 3 A.—In arithmetic, this question is frequently asked: "What is it we are trying to find out?" "What will it be to us?"

6 B and 6 A.—In writing a letter or story, the children are often reminded to think of the object or purpose of a piece of work, as that determines how the story shall be told. The aim of the lesson is always recalled whenever the children show a tendency to wander or become confused.

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5. Assigning from the Text and Requiring the Children to Discover Aims.

1 A.—See what you think would be a good name for this story.

2 B and 2 A.—Have the children prepare questions on the reading lesson.

6 A.—Have the children pick out the most important events in the lesson and the most striking characters.

6. Have the Children Try to Show the Relation of the Subject-Matter to their Needs.

1 B.—One boy remarked, "The reason I want to read well is so I can read the newspaper and find out what my papa's talking about."

3B Grade.—Children are often asked to talk about why they are anxious to learn to read and do their number work. Children are often asked why they need to find out the cost of sugar required by a recipe.

4 B.—Frequently asked in spelling—"Where will we use this word?"

6 A.—Children are often asked, when studying geography and arithmetic, where such knowledge will be of any use to them.

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II. Gathering Data

It is almost impossible to discuss this factor fully as the results of employing it may be endlessly detailed. The outline below merely attempts to illustrate sources from which data is gathered. For example, in the study of wool, "The children in collecting data, brought pictures of sheep, sheep shearing, factories, the process of preparing wool for use, spinning wheels, Navajo women weaving rugs, etc. The pupils inquired at home and at the stores, as to prices, and grades of rugs, carpets, clothing, etc. They wrote to the Whittall Rug and Carpet Co. for samples of wool for a chart. These were received; also booklets on the Woolen Industry."

It will be observed that a large variety of sources were employed above.

Similarly, in the study of lumber, the following things were done in gathering data: "1. Study of Lumber Camps in Maine. 2. Letters written to general passenger agents of various railroads for information of wooded sections. 3. Local lumber dealers interviewed by pupils for names of Chicago companies for specimens of wood. 4. Pictures brought, cut from papers and magazines. 5.

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Books on the subject obtained from library, etc."

In preparing compositions on the choice of occupations, in the 8th grade, the boys gathered information for several days regarding various mechanical trades and office work, while the girls gathered information regarding teaching, dress-making, catering.

1. From Text-Books.

1 A.—Pupils study the reading lesson to find how many persons in the lesson. Who talked. What each said. To whom each talked and what each one did.

2. From Other Books.

See illustrations above.

3. From People, Traditions, etc.

2 B.—In studying Indian life, the children were asked to find out all they could by talking with parents and relatives.

5 B.—A little girl from the 3d grade came in and told the story of peat. In the study of cocoa, after gathering all the information possible from the library, the children wrote a letter to a manufacturer of chocolate, asking for

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further information. The result was a large exhibit was sent, together with letters and books of explanation.

7 B.—In the study of silk, a missionary was invited to talk about the growth of silk in China.

7 A.—In history, the pupils wrote letters to various members of the President's Cabinet, to the Librarian of Congress, and to the head of the Patent Office.

4. From Illustrative Material.

(*a*) *Raw Material from Museums, etc.*

5 B and 5 A.—In nature study, collections of leaves, pods, twigs, branches and nuts were gathered. Specimens of wood from trees and lumber yards were gathered.

(*b*) *Stereographs*

All grades above the second made extensive use of stereographs and souvenir postal cards in gather data on many topics.

(*c*) *Lantern Slides*

Two schools report the extensive use of lantern slides secured from the University of Kansas, in studying various topics.

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(*d*) *Moving Pictures*

Many reported that the children had brought considerable data on various topics from what they had seen in moving pictures.

(*e*) *Magazine Illustrations*

This might have been included under 2 above "as other books." The report shows large quantities of material and information gathered from the use of magazines. This source was used more than any other one in gathering pictures.

5. Excursions.

This means of gathering data was prominently employed above the 3d grade in gathering data on nature study and geography and in the study of local industries.

III. SUPPLEMENTING THE THOUGHT

1. Reading Between the Lines.

2 A.—In reading lessons.

3 B and 3 A.—In reading by such questions as "What made the mother duck call the ugly duckling her very own child as soon as she saw it swim?"

5 B.—Analyzing emotions of persons speaking in stories.

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5 A.—Characters judged by speeches and actions.

6 B.—King John's character read from his actions.

6 A.—In reading, history, and geography implied thoughts are brought out.

2. Outside Sources.

1 B.—Mother Goose books to show illustrations of rhymes studied.

2 B.—Outside references are mostly mother and father. 2 B pupils often bring in books about animals and people or stories about what they are studying.

2 A.—Stories brought in and read to the other children.

3 B and 3 A.—Same as above. Also looking up on history topics outside the text.

4 B.—In studying wheat the children inquired at home about the kinds of wheat, planting, harvesting, etc. They also read "The Story of Wheat." They talked to men who had raised wheat and to men who work in the mills.

5 B.—Outside reading assigned to special pupils and their reports called for. Newspaper articles brought in, in order to write a story of imaginary trips to

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foreign lands and books and magazines read on the subject.

5 A.—Reports on outside reading on a given subject. Bring in pictures or magazine articles bearing on a given topic.

6 B.—Materials brought in for product study in geography—rice, Kafir corn, cotton, and post-cards.

6 A.—Library books, magazines, newspapers, reference books, conversations with others, lectures, moving pictures, plays, pictures, post-cards, experimenting.

3. Imagination—Vividness of Ideas.

1 B and 1 A.—Songs, rhymes, and stories dramatized.

2 B.—In language children are often told to close their eyes "to see the picture in the story." Individuals try to describe so as to give classmates a picture. Pictures of stories made by drawing or cutting.

2 A.—In arithmetic—playing store, measuring quarts, and pints. Dramatization.

3 B and 3 A.—The children shut their eyes and make a mental picture while another reads or tells something. Children are asked to describe the picture a

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certain paragraph makes for them. Dramatization. History vivified by use of sand-table. "Cave-man" stories illustrated by crayon pictures.

4 B.—In spelling—try to see words with eyes shut.

5 B.—Assigning speaking-parts in reading a story. In geography imaginary trips are taken.

5 A.—Illustrate a story or poem or a composition. Imaginary trips described in writing.

6 B.—Visit with pointer scenes of study.

6 A.—Oral and written descriptions in English composition, reading, geography, and history.

4. Supplementing by Children's Own Thoughts.

1 A.—Children make up reading lessons about a picture.

2 B.—In language, class composes a story about a picture.

2 A.—Children's own ideas concerning subject matter of the reading lesson are called for.

3 B and 3 A.—Children's objections and additions to thought called for, usually by asking "What do you think

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about this statement?" or "Have you anything to add to what we have found out?" For example, when we were studying the chimney swallow one child said she thought the smoke in the chimney would choke the young nestlings. The class was asked what they thought about it and after a period of silent thinking one ventured the solution that the swallows used the chimneys which did not carry out smoke in the summertime; another said kitchen chimneys would not do because they were used summer and winter.

4 B.—Children suggest words for spelling and when "year," for example, is in spelling lesson, they make a list like it, such as "fear," "dear," "near," etc.

5 B.—Assign problems in geography and reading which call for thinking on the children's part and to which an answer cannot be found in the books. Discussion and questions encouraged.

5 A.—Children suggest what the next move in historical events might be and tell why they think so.

6 B.—Boys who drive cows bring the ideas gained from their own experience

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to bear on study of cattle industry. Family traditions brought to bear on study of composition of the English nation.

6 A.—Children's addition to thought recognized as valuable; child understands that his record goes up by contributing his own thought on any subject; his own experience is utilized.

5. Questioning to Encourage Real Thinking.

1 B to 8 A, inclusive.—Every teacher was found to use such questions as "What do *you* think about this?" and "Do you agree with what John says?" etc.

6. Dramatization—To Bring Out Omitted Speeches.

2 A to 8 A.—This method of securing thought is used from 2d grade up—of course gradually requiring more and more supplementary thought. For instance, in 3d grade, this might be the problem, "What do you think Odysseus would say to the Greeks when he got back to the ship?" (Book says "he told them what he had seen.") In the 8th grade a debate between a Northerner and a Southerner may be called for.

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7. Illustrative Material.

1 B and 1 A.—Pictures of Mother Goose rhymes that are being studied. Pupils brought pictures from home.

2 B.—Pictures.

2 A to 3 A.—Stones and clubs like the tree-dwellers and cave-men used. Jars like those Kablu made. Pictures of Babylonian and Greek life. Grocery bills brought in to be added up.

3 A to 8 A.—Illustrative material is brought in for every subject, too numerous to mention.

8. Dictionary.

5 B.—Use of dictionary begun.

9. Use of Book Index.

5 B up.—Gradually children are taught to use index more independently.

IV. Judging What to Do and the Worth of the Data

1. Listing Essential Ideas.

3 B and 3 A.—For example, "What is worth remembering about the early cave-man?" "Why is that worth while?"

4 B and 4 A.—In geography—"In planning a trip to London, the class

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studied all the advertising matter used by the various steamship lines. They had to do extended comparing and investigating in order to determine which statements were reliable." "In the study of lumber, the children found that some of the books were so old that they were not accurate. Some of the forests had disappeared."

5 B and 5 A.—"In comparing China and Japan some pupils reported that in China they no longer compress girls' feet. Others doubted the correctness of this view, saying they had heard missionaries explain how this practice still goes on in China." "In studying the Japanese, one girl couldn't see how a Japanese man could travel forty miles in one day. The boys looked up regarding Marathon races to prove that the geography statements were reliable." "Considerable ability and judgment is required in grading writing by the Ayres' scale."

6 B and 6 A.—In history the children compare the work of one president or statesman with that of another to judge who did the most good for the nation. In their use of history the children learn to prefer the books by real historians

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rather than those written by mere text makers.

7 B and 7 A.—In dramatizing the child exercises good judgment in determining what may be included and what shall be omitted and in deciding just what shall be spoken and done and what shall be omitted and taken for granted.

V. Organizing the Data.

1. Reproduction.

All Grades.—A reproduction of stories is used.

2 B.—"Before we finished the story of 'Red Feather' we wrote it, putting in all the important things we could remember in his whole life."

3 B and 3 A.—Reproduction of main points in a given paragraph, learning to tell a story. Children are led to classify under two heads: (1) facts essential to plot; (2) statements that are given to make the story clear. In geography—"The sand table is a means of reproduction and of organizing the ideas of the children."

5 B.—"Children tell the story of the reading lesson or summarize what has

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been said in geography. They also rewrite the story, telling only the most important things. They may be asked to list the important things and then later arrange them in proper order."

Upper grades.—Write a letter to a friend in which the pupil represents himself to be some prominent historical character telling of his experience and what he is trying to accomplish.

2. Topical Outlines.

3 B and 3 A.—Crude outlines—point out a thing that we want to learn about a given subject.

Above 4th Grade.—Make an outline of points in geography or history, from which to recite. Composition on "Our Flag." The 5th grade gathered all the information about the history of the flag. —(1) the making of the first flag; (2) its appearance; (3) its first use; (4) the first change, and why; (5) the origin of the name "Old Glory"; (6) reasons for the flag. Pictures relating to these topics. Material organized, and the compositions, when finished, were illustrated in colors.

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3. Ideas Arranged According to any Definite System other than a Topical Outline.

2 B.—(1) By opposites; (2) by groups; (3) by colors; (4) by sounds; (5) by parts and wholes.

5 B.—Arranging products in order of importance. Make a leaf chart. Make a products map.

5 A.—Arranging the main topics as to time or importance.

Upper Grades.—Listing the good and bad things about a character or prominent person studied. Determining just the scenes and characters to be used in dramatization.

VI. Maintaining A Tentative Attitude or Holding Judgment in Suspense—How Secured

2 A.—Secured by asking why such and such a thing is true.

3 B and 3 A.—In geography and arithmetic, by such questions as "What makes you think so-and-so?" "Does that prove it?" or by asking opinions from several pupils and calling for arguments; finally

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by asking if it is a question upon which we must all agree.

4 B.—In the study of wheat the children were investigating for some time, in determining the best kind from the standpoint of a sure crop, the best prices, the best flour, etc.

5 B.—Encourage discussion, teacher sometimes taking opposite side.

5 A.—Pupils are given a chance to express themselves and to defend their views. Show class that each has an argument and leave question unsettled for a time. Pupils are shown how authors differ as in the use of capitals in geography or in punctuation or in stetaments in history.

6 A and Above.—(1) By the teacher's taking the tentative attitude herself. (2) By letting child go through experiences which will lead him not to be so cocksure. (3) By pointing out disasters brought on others by dogmatic attitudes. In discussing climates in geography the pupils found that latitudes alone could not be considered. Topographically a location with respect to mountains and water was important.

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VII. Reaching a Conclusion

All the steps preceding are for the purpose of making this step possible. How this step is taken depends upon the nature of the work. The result of this step may be to decide upon a plan; to formulate a technical definition or to state a principle. The important thing is that the thinking which precedes may make this step possible as an independent one developing a conclusion and a statement of the same, resulting in the independent thinking of the children rather than in memorizing something they have found in a book or remembering something their teacher has told them.

VIII. Applying or Using Conclusions

1 B and 1 A, 2 A.—Reading to others at home; teaching little sisters and brothers; acting on knowledge gleaned in all lines of work, such as "swatting the fly," cleaning the teeth, ventilating the sleeping room, etc.

2 A.—After teaching inch and foot child is given a problem in which he is obliged to do actual measuring. After learning to add he finds cost of part of his school supplies.

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3 B and 3 A.—Clearness of expression used in communication. Stories told at home or to other classes. Measuring, weighing, and cost computation used in making candy. Adding used also in proving grocery bills and finding price of school supplies. Children try to make jars like Kablu, weave baskets like the cave-women, etc. "In arithmetic, when we were finding the areas, as given in the 3 A work, the children measured many objects in the room, such as their desks, tablets, the blackboard, etc. The class found the areas of these objects in the usual way, then divided such things as the table and blackboard to prove their answers were correct."

4 B.—English applied to all work. Ideas from geography and reading used in composition.

4 A.—Geography knowledge utilized in newspaper reading.

5 B.—Knowledge of fractions used in measuring in manual training. Use of dictionary and index to save time.

5 A.—Send letters that are written; have children place a border they have designed on the blackboard. Ideas gained from healthy body are used in daily living.

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6 B.—Ideas from history used in composing historical play.

7 A and 8 B.—Writing letters for actual use; stories for school paper, state fair, Christmas and Thanksgiving exercises. Measuring used in laying out school garden. Per cent. of attendance found.

IX. MEMORIZING AND HABITUATING

1. Poem.

1 B and 1 A.—Thought discussed and then fixed by many repetitions.

2 B.—Teacher reads the poem; child tells the story; teacher re-reads to bring out parts of story omitted by child; children tell in words of author; repeated in a week; repeated at intervals; repeated when children ask for the poem.

2 A.—Almost as in 2 B, with addition of writing poem on board and having children study.

3 B and 3 A.—Same as 2 B, with addition of suggesting ways and having them suggested by which sequence of ideas can be remembered.

4 B to 6 A.—Same as preceding.

2. Definitions.

4 A—6A.—Children make their own definitions after understanding the work.

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3. Table.

2 B.—(1) Class works out a table with objects. (2) Writes table on blackboard. (3) Writes table at their seats.

2 A.—Games used to drill on tables.

3 B.—Worked out and arranged as follows:

1	2	3	4	
1	2	3	4	
1	2	3	4	etc.

Observations made, such as, Each answer is 3 larger than the one preceding. Each child tries to give answer forward and backward correctly; accuracy looked to more than speed. Mistakes are corrected by class immediately. (Reason for quick correction explained to class.) Then table arranged out of order and answers given; drill at board reciting and writing; drill with bean bag.

4. Spelling.

1 A.—In reading for developing the Christmas thought we had a reading lesson and letters to Santa Claus from the chart, using repeatedly the new words, "Love" and "Giving," in the Christmas thought.

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2 A.—Call attention to troublesome syllables or parts. Give lists of words having similar syllables with which child is familiar. Then drill with games.

3 B and 3 A.—Same as above, except games are not used.

4 B.—(1) List written on upper part of board; words, syllabicated; accented sylables marked. (2) Teacher points, class pronounces. (3) Same with strong pupil pointing. (4) Pupil points and pronounces himself. (5) Drill for fixing word-pictures by writing on board and paper and spelling orally.

4 A to 6 A.—Finding difficulties and focussing thereon and observing parts already known.

5. Facts to be Held.

2 B.—In reading, the teacher asks her thought-questions again at the end of the lesson and writes the answers as the children give them. Then the children lay the answers with their letter cards.

2 A.—In language work, in teaching correct forms, games are employed in which the expression is repeated many times.

3 B and 3 A.—(1) Reasons for memorizing given by the class if possible. (2)

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Arranged in logical connection. (3) Ways to recall facts suggested by pupils and teacher.

4 A.—By repetition and use in new work.

6 A.—By drill reviewing at lengthening intervals.

4 A.—By repetition and use in new work.

6 A.—By drill reviewing at lengthening intervals.

X. Preserving Student's Individuality

2 B.—Encourage individuality in writing sentences, in drawing and discussing.

3 B and 3 A.—By giving different children a chance to express their opinions, before showing approval or disapproval, except in drill material (in which case class corrects immediately); by encouraging children not to back down until convinced; by often asking, "Do you all agree with what has been said?"

4 A.—Children are given an opportunity to express opinions about lessons and stories read outside of school.

5 A.—Induce children to talk; consider their opinions, and insist on class giving respectful attention. Freedom is given in matter of arrangement, if pos-

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sible. Originality in drawing, ways of beginning a story, beginning or ending a letter, is praised. Teacher shows interest in an opinion that differs from that of the majority.

6 A.—By providing opportunity for leadership. By recognizing the worth of individual contributions. To many children silent study is not stimulating, "and for that reason provision should be made for them to study together, enabling them to ask questions and discuss. Where they do not ask questions and carry on discussions there is little or no interest or action and little thinking. A good plan is asking them to study or discuss, thinking of important questions to ask, each preparing ten questions. Each child should be careful to ask no question which he does not seriously wish answered."

XI. Establishing Right Habits of Study

In this connection teachers report throughout the course, giving attention to neatness, accuracy, and economy. They seek to train the children to keep

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at work until the task is finished. They plan with them how to arrange their books and tablets so the desk will accommodate them and keep them in order. In the lower grades they are trained to keep the place; to copy work exactly right from the board; to read just one sentence; to read to a question mark or to read just one paragraph.

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Complete Reports on Training

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COMPLETE REPORTS ON TRAINING TO STUDY

THE outline presented in the preceding part of this study was compiled from the dissected reports of teachers in reference to their efforts to train the children in right habits of study. A few of the good reports sent in are quoted below in their entirety. They are not presented as perfect, but all of them are good. They report work actually done. It may be no report can be taken as a model by which to work; but each is suggestive and helpful.

The point of view that should develop from a study and criticism of these reports should result in equipping every teacher to proceed more effectively in training her children in good procedure in study. Self-examination and honest criticism of her work must ever be one of the most productive means of promoting her growth.

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SECOND GRADE

Eskimo Play

Recognition of Problem.—Desire to express for others knowledge of Eskimo life and habits.

Gathering Data.—This work had been previously accomplished by means of—

a. 1. Pictures brought by pupils.
2. Stereoscopic views.

b. 1. Stories of Eskimo life gathered by pupils at home.
2. Stories told and read to class by teacher.

c. Opto-industrial exhibits.

Organization of Ideas.

a. Discussion of pictures.

b. Stories told by pupils to class.

c. Teacher's stories reproduced orally by class.

d. Short stories of Eskimo life written by pupils.

Scientific Doubt.

a. Selection of types of Eskimo life and habits, to be used in the play.

b. Rejection of unimportant details.

Memorizing.—Learning parts.

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Dramatizing a Story

Problem.—To dramatize and present a playlet, involving these characters: mouse, cat, cow, farmer, butcher, baker.

Choosing Pupils to Represent Characters.

a. Is the pupil interested?
b. Does he act like the character he is trying to represent?
c. Does he talk like the character he is trying to represent?
d. Does he look like the character he is trying to represent?

Memorizing the Parts.

a. By concentration of attention.
b. By thinking the steps over in correct order.
c. By association and relation of one part to another.
d. By constant repetition in rehearsal.

Presentation of the Play.

a. The individuality of child asserts itself.
b. He exercises initiative.

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THIRD GRADE

The Grocer

We wanted to find out all we could about a grocer and how he keeps his store. We investigated and talked about—

1. Why we need one.
2. Location and general appearance.
3. Supplies kept.
4. How to take care of the store and stock.
5. Tools and implements needed.
6. How to buy, sell and measure goods.
7. How to hire and pay employees and keep account of money.
8. Importance of cleanliness, order and honesty on part of grocer.
9. Importance of honesty and right relations on part of public with grocer.

And then we played store, using as many of our ideas of a first-class grocery store as we could.

A Christmas Remembrance

Our problem was a Christmas remembrance to parents. A story used in

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morning exercises suggested a letter, containing a promise to try hard to overcome some careless habit, or perform some duty more faithfully the coming year. This sort of Christmas gift seemed to appeal strongly to the children, and they immediately began to "assemble material."

A variety of needs for reform in the different homes were confessed; such as, the hanging up of wraps; more faithful and punctual piano practice; more prompt attention to the call to rise in the morning; more careful attention to daily tasks or personal cleanliness; the raising of grades in school work; and many others.

The matter was talked over and letters written with pencil during one language period. Care was used in form and spelling, and, after correction, the letters were carefully copied, with pen and ink, and envelopes addressed the next day. Christmas "stickers" added to the attractiveness of the sealed missives; also tiny freehand drawings of a Christmas tree or bit of holly; and they were put away until the close of school, December 23d.

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Geography

In geography, the children studied materials used in building houses. They first brought samples of all the different materials they could find. We then found some stories about the preparation of the materials. Some of these stories were suitable for the children to read, but more of them were suitable for the teacher to use. The children hunted through magazines and newspapers for pictures of houses built of these materials. These pictures were used in the language papers that were written. Those who found no pictures drew some, instead.

A Study of Plantation Melodies

a. With the regular music assignment to make a study of our own music.

b. The children brought in information and music from all available sources.

c. Classification of songs.

d. The best songs were selected.

e. These songs were committed to memory and sung.

First we learned a few melodies from records played on the grafonola, and after making careful study we found that many of these songs were traditional.

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The children were so interested that each child began a search for the songs and, as a result, they brought in information and music from every available source.

The music of the children was so pleasing to the supervisor that she had them sing while she took down the music to one of the folk songs that pleased her most.

Care of the Teeth

We sent to the Prophylactic Tooth Brush Company and Colgate's for information. They were very generous, sending pamphlets on "Care of the Teeth," and dental tubes for each child. They also sent pictures showing the proper way to clean the teeth. The children brought poems and stories from books and magazines relating to the subject. They were intensely interested.

They concluded that—(1) A clean tooth never decays. (2) A decayed tooth may cause illness, etc.

Memorizing facts in above paragraph.

Children who never had a tooth-brush before told me their mammas bought them brushes. They all agreed to brush their teeth morning and evening. If I forgot to ask them during the opening

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exercises whether they remembered they reminded me of it. Of course, some forgot, but one boy greeted me each morning with, "I brushed my teeth last evening and this morning."

We finally wrote stories on "Care of the Teeth."

Reading Lesson on Ostrich

The Problem.—The fixing of facts stated so that they become knowledge to the child:

1. Measured on wall to ascertain height.
2. Compared weight with that of men.
3. Discussed feathers.
4. Measured on floor the distance of 20 feet to get idea of distance covered at each step when running.

Doubt.—This led children to doubt the truth of above statement.

Supplemented Text.—(1) By discussing the use of eggs by travelers in the desert. (2) We also had the following problem: If 1 ostrich egg equals 24 hen eggs, how many people would 1 ostrich egg feed, if each person ate an amount equal to two hens' eggs? (3) Postal card pictures were shown.

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Organization of Data Preparatory to Retelling.

STUDY OF COTTON

Factors of study used:

1. *Gathering Data.*
   From text-book.
   From people who raised cotton.
   From own experience.
2. *Organization.*
   Making an outline after selecting important topics.
3. *Verification.*
   Statements made in text were verified from experience of those who had raised cotton here, or who had lived in cotton states.
4. *Memorizing.*
   Principal points were memorized before writing the story.

ARITHMETIC

1. *Consciousness of Author's Problem.* Each child was to be given one dollar to buy groceries and make problems in addition, subtraction, and multiplication.

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2. *Gathering Data.*—The children gathered their own data on prices of milk, butter, and eggs.

3. *Organization.*—The children made their own problems.

4. *Application.*—The children were able to tell the processes used; whether addition and subtraction, or multiplication and subtraction.

5. *Memory.*—Drill in Multiplication Tables.

6. *Initiative and Self-Development.*—The fact that they went ahead and secured their own information exercised their power of self-development.

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FOURTH GRADE

GEOGRAPHY

National Parks

Of the two Pacific highland wonders—the Yellowstone National Park and the Yosemite National Park, which would it benefit you most to visit?

1. *Problem.*—To find out what the parks contain.

2. *Gathering Data.*—Class gathered what data text-book gave. To supplement this, they read from magazines and other books and brought pictures from home.

3. *Organization of Ideas* was called for in so far as children had to omit in reading their material all that was not relevant to the problems.

4. *Deferred Judgment* was a factor in the preparation of this lesson to the extent that the children had to wait for the reports of the various members of the class before reaching a conclusion.

5. *Memorizing* was also a factor because the children could call to mind the facts and the chain of reasoning which supported the conclusion reached.

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Europe

Before beginning our study of Europe, we divided the country into five divisions. We considered each division separately.

Problem.—(1) To select the country each would prefer as a place to live. (2) Find out why it was attractive to him. (3) Collect any material available to use in describing each country.

Sources of Material.—(1) Our text. (2) Supplementary readers—"Around World, III." (3) Books at home and on my desk. (4) Discussions with their parents.

Classification of Material.—After material was gathered, working together we classified it as to—(1) Size and location of country. (2) Climate and soil. (3) Industries. (4) Cities and important water supplies. (5) Government.

Comparing New Orleans and Topeka

1. *Problem.*—Where would you rather live in New Orleans or in Topeka? Give reasons in order of their importance.

2. *Gathering Data.*—(1) Study of text in Geography for information about New

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Orleans. (2) Study of map of New Orleans. (3) Supplementary reading—Carpenter's Geographical Reader.

3. *Organization of Ideas.*—"Reasons in order of their importance."

4 and 5. *Deferred Judgment* and *Consideration of Soundness of Statement* were important factors in this lesson.

6. *Memorizing of Reasons.*

State Co-operation

1. *The Problem.*—In what way do the States in our country help each other? This involved a problem in regard to the importance of each group of the States studied.

2. *Collecting Data.*—By reading in the geography. A few facts were gathered by the reading of railroad folders.

3. *Organization of Ideas.*—This was done for each group of States as studied, under such headings as—Farm Products; Mining Products; Manufactured Products; Great Men; Historical Places; Scenery.

BREAD

1. *Problem.*—To determine whether we should buy our bread or make it.

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2. *Gathering Data.*—Children found the brand of flour used at home and cost per sack. One child, whose father was a grocer, brought list of kinds of flour sold and cost of each. Children found out number of ounces in small loaf and in large loaf.

3. *Organization of Ideas.*—Determined brand of flour most used and its cost. Cost ÷ 50 (approximate number of pounds in a sack) = cost of 1 pound—3 cents. 12 ounces of bakery bread cost 5 cents.

4. *Application.*—Some preferred home-made bread, regardless of cost. 1 cake of yeast costs 2c and will make 6 loaves or more. But since 12 oz. of bakery bread cost 5c, and 1 lb. of flour cost about 3c, we decided that we were paying the bakery nearly twice the actual cost. It is more economical to eat home-made bread.

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FIFTH GRADE

GEOGRAPHY

Hawaiian Islands

1. *Problem.*—When the 5 B class was studying the Hawaiian Islands, the question came up as to why the United States should own those islands; so they decided to find out.

2. *Gathered Data* from: Primary geography; advanced geography; atlas; conversations with those who had visited the islands; pictures.

3. *Organizing Data.*—(1) Found location in regard to North America, and Asia, Australia, etc. (2) Advantages and disadvantages from a military viewpoint. (3) Valuable products, etc. They decided that the islands were valuable, and should be held.

Minneapolis

I. *Problem.*—Why is Minneapolis called "The Flour City"?

II. *Data Gathered* from—

A. Text.

B. Carpenter's Geography of North America.

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C. Charts, books, and case of products from Washburn-Crosby Mills of Minneapolis.
D. Post cards and pictures collected by pupils and teacher.
E. Information gained by pupils from other sources.
F. Information given by teacher.

III. *Organization of Material.*
A. Central States studied as a wheat region.
1. Soil.
2. A wheat farm.
B. Things necessary to make a city a manufacturing center.
1. Power—water or fuel for steam.
2. Raw products easily obtained.
3. Demand for the manufactured article.
4. Shipping facilities.
5. Sufficient labor.
C. Cities manufacturing flour named.
1. Duluth, Superior, Fargo, Sioux Falls, St. Louis, Topeka, etc.
2. Minneapolis.
a. Location in reference to power, raw material, shipping, etc.
b. Its elevators.

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c. Its mills producing good flour.
(1) Pillsbury; output.
(2) Washburn-Crosby.
(a) Explanation of charts showing a grain of wheat and plan of mill.
(b) Talk by pupils on process of making flour.
(c) Examination of products in the product case.
(d) Packing.
(e) Shipping.

IV. *Exercising Scientific Doubt.*
A. Why other cities mentioned are not as great in this industry as Minneapolis.
B. Doubt as to the better quality of the flour.
C. Doubt as to Minneapolis being a better shipping point than St. Louis.

V. *Verification* that Minneapolis is the greatest manufacturing center for flour, due to—
A. Water power.
B. Abundance of grain near it.
C. Leaders in invention and enterprise.

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D. Demand for flour.
E. Near good shipping points.

The above was also correlated with arithmetic in denominate numbers.

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SIXTH GRADE

GEOGRAPHY

Gathering Data.

In a review of Asia, each child was asked to prepare a talk on some country of Asia in which he was interested. It was also to be a map talk.

Huntington's Asia, a geography-reader, was one reference book used. Several children found books on subject at home. One girl collected a number of pictures and gave a talk on them. It was one of the most interesting lessons of the term.

The study of Italy led a boy to give an interesting talk on Da Vinci and two of his famous paintings. Another boy talked on Catacombs of Rome.

Perhaps most enthusiasm was aroused among the boys in 6 A class, when the "Invention of the Steamboat" and the "Atlantic Cable" were under discussion. *Popular Mechanics* was quoted, and one boy volunteered to bring a book showing pictures of various parts of the cable and how it was laid. Also pictures showing modern and ancient boats. This he did, and next day had an interested crowd

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around him when he explained the pictures.

A lesson on Germany brought out the question, "Where is the Krupp factory?" No one knew, so class was asked to find out and report next day. Several were ready next day, but one boy found out in such an original way that he came to his teacher and told her privately he saw stamped on a piece of metal at Santa Fe shops, "Made in Krupp Factory, Essen, Germany."

How have the mineral resources of Kansas aided in developing the State?

The children drew the map, locating the various mineral deposits, as coal-beds, salt, gypsum, lead, zinc, oil, gas, stone-quarries, etc. Specimens from as many of these as could be obtained were brought to the class; also pictures. Then the children located the cities at or near these deposits, and studied them as to growth and importance.

They discovered that the wonderful growth of Coffeyville, Independence, Iola, and Chanute was owing to the natural gas and oil in those localities, bringing many factories and people; that Hutchin-

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son's growth was largely due to its immense salt works; that Galena and Pittsburg were in the center of great coal and smelting regions; that Fort Scott had benefited from its coal mines and stone-quarries; that Osage, Weir City, and Scranton owed much to their coal mines; and so of others.

The class then looked up and compared many of the outputs and values of deposits for 1915 with those of the list for 1910 in the book. Maps were then placed on the board from memory.

Factors used in the above study:

1. *Gathering of Data.*—*a.* From textbooks. *b.* Original sources (specimens). *c.* Other sources (pictures, books, and newspapers).

2. *Supplementing the Text.*—The children's pictures and articles from home.

3. *Organization of Ideas.*—Developed in the series of maps made from day to day, each one a distinct idea. Comparison of output of different mines in 1910 and 1915.

4. *Memorizing.*—Done incidentally, as when maps were made from memory on the blackboard.

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THANKSGIVING LUNCHEON

1. Letters written to principal asking permission.
2. His reply stating that request was granted.
3. Menu discussed and decided.
4. How to provide it with least expense.
5. How prepared and served.
6. Committees appointed.
7. Letters of thanks to those who helped.
   a. Compositions describing in detail the luncheon.

Problems Met.

a. The necessity for careful planning.
b. The writing of a suitable letter to the principal.
c. The need for a division of labor in contributing to one common cause.
d. Acquiring a knowledge of correct table manners.

Factors of Study Employed.

1. Every child recognized that the giving of a luncheon correctly presented a new *problem* and

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every one began work at once to bring about its happy solution.

2. The gathered information from many sources was brought in and discussed.
3. Data organized and referred to the proper committee.
4. The suggestions were weighed and those which were thought to be the best were selected.
5. The theory was executed in the preparation, serving, and eating.
6. The letters describing the luncheon caused an exercise of memory.

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SEVENTH GRADE

Geography

In the study of a foreign country, one of our problems is to determine, if possible, what advantages that particular country may have over ours, or *vice versa*.

While the following cannot be classified strictly as a problem, yet the plan has been found a helpful one. An effort is made to collect all available material in the way of pictures and current topics bearing upon the country which is being studied. Pupils are assigned topics relating to some of the most noted places, people, and happenings in that country. The whole is mounted and bound in book form.

History

Aim.—To give a lasting impression of the Colonial Early Settlements. In order to do the same it was necessary to create a desire for further research and add life and interest to the review.

The class was divided into groups of twos and threes, with a few extra, if needed, in any group. Each group

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was assigned one colony (as Massachusetts or Georgia) for further study; and reproduction was to be given in two weeks.

The groups were given no limitations. They might dress in costume, dramatize, tell the story, or show pictures illustrating their colony. They might use one plan or all or any number.

Example—Georgia: (1) Boy dressed as James Oglethorpe. (2) Boys (small group of five), prisoners in chains. (3) Two girls told the story of Oglethorpe and prisoners; then of their final settlement in Georgia.

GERMAN

I. *The Concrete Situation.*

I offered as a reward to the class with the highest average for the semester's work, a real German party, speaking *only* German.

II. *Factors, and How Used.*

1. Recognition of Problem.

a. Daily work must be the best possible, in order to raise average of class.

b. German vocabulary necessary in order to talk at party.

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2. Gathering Data.
   a. From text-books.
   b. From class recitation, in order to get result under 1, a.
   c. From text-books, from German dictionary, from teacher, for 1, *b*.
3. Organization of Data.
   a. Vocabulary especially necessary for the concrete occasion.
   b. Idioms of common usage in polite German gatherings.
4. Doubt or Judgment.
   a. Special care for accuracy in daily recitation.
   b. Care for own and fellow-student's pronunciation and correct form usage.
5. Application.
   a. Daily preparation; making daily average good.
   b. Practice outside school in conversation, in order to enjoy party.
6. Memorization.
   a. Vocabulary for occasion.
   b. Special idioms.

III. *Result.*

My youngest—although smallest in numbers—class, 7 A, won there-

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ward, by only .5 of a point, and thoroughly enjoyed the last afternoon of the term at a German party with German refreshments and quite realistic German conversation and games.

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EIGHTH GRADE

ARITHMETIC

I. *Stating the Problem.*—The surface of a cylinder = ?

II. *Data from Observation.*—Study of type form by comparison with known forms.

Bases, circle.

Lateral surface shown by use of paper to take form of rectangle.

Length = circumference of base.

Width = altitude of cylinder.

III. *Necessary Data from Previous Knowledge.*

Diameter of circle = ?

Radius of circle = ?

Altitude of cylinder = ?

IV. *Grouping Data from Previous Knowledge.*

1. To find area of base.

a. Area of circle when diameter is given = $\pi\left\{\frac{D}{2}\right\}^2$

b. Area of circle when radius is given = πR^2

c. How many bases ? = 2.

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$\therefore$ Area of 2 bases = $2\pi R^2$ or $2\pi\left\{\frac{D}{2}\right\}^2$.

2. To find area of lateral surface.
   a. Area of rectangle = length × width.
   b. Area in terms of cylinder = cir. of base × alt.
   When dia. is given = $\pi D \times$ alt.
   When radius is given = $2\pi R \times$ alt.
4. Combining data in application combining previous knowledge to make formulae to meet new problem.
   a. Entire surface of cylinder when diameter of base and altitude are given = $(\pi D \times \text{Alt.}) + 2\pi\left\{\frac{D}{2}\right\}^2$
   b. Entire surface of cylinder when radius of base and altitude are given = $(2\pi \times \text{Alt.}) + 2\pi R^2$

V. *Memorizing*.—To fix thought developed.

VI. *Solving Problems*.—To fix thought and develop skill and accuracy.

VII. *Results*.—Pupil finds that he has discovered for himself what book teaches.

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PROMOTIONAL EXERCISE PROGRAM

1. *Recognition of a Problem.*—Nature and character of closing exercises for an 8 A class.

2. *Collecting and Discrimination of Data.*—Pupils ascertained information as to such exercises in other schools, and reported: Programs given by pupils; addresses; plays, musical programs, etc.

3. *Discrimination of Data.*—After discussion, the pupils decided there was not sufficient ability in the class to furnish an acceptable program, entirely themselves; that an address alone would not be quite acceptable; had not time to prepare for a play; not enough musical ability to give an entire musical program, etc.

4. *Formulation of Plan.*—It was finally decided that a mixed program was best suited to their class.

5. *Testing of Plan.*—The following mixed program was given:

Song by school.
Reading of magazine to which each pupil had contributed.
Vocal solo by pupil.

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UNIV. OF CALIFORNIA

Presentation of pictures to school, by pupil.
Address, by a distinguished patron of the school.
Song by school.

Manual Arts

Furnishing Our Manual Training and Domestic Science House

1. An empty five-room house was rented near the school.

2. It was determined to furnish the five rooms harmoniously throughout.

3. This meant the study of shades, tints, and colors best suited to our needs.

4. We had to choose material and make the hangings and draperies, keeping always in mind harmony of color and blending.

5. The right color of paint for floor, mopboards and wainscoting had to be selected.

6. We had to plan to meet the requirements of taste and yet remain within the bounds of a limited purse.

Problems Met.

1. The need of coöperative planning was evident.

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2. Committee of girls appointed to select wall paper, hangings, etc.

3. Committee of boys appointed to get proper appliances, trestles, stepladders, etc., to the house, in readiness to begin papering and painting.

4. Proper selections were made by the whole body upon the report of committees and inspection of samples.

Factors of Study Employed.

First, The Problem, and recognition of same.

Second, Organization into committees, etc.

Third, Judgment: Deciding upon and choosing of hangings, draperies; the selections of proper tints and colors to constitute a harmonious scheme throughout.

Fourth, Application of ideas and execution of various theories.

Fifth, Verification, by seeing that the whole is good.

Sixth, Memory, Initiative: Opportunity for individual development.

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